



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,735	11/24/2003	Yu-Lin Yen	251310-1100	2750
24504	7590	10/18/2005	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/720,735

Applicant(s)

YEN ET AL.

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 and 21-26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-20 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 14 is/are rejected.
- 7) ☒ Claim(s) 11-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to the election filed June 29, 2005.

#### ***Election***

2. Claims 8-10 and 21-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on June 29, 2005. The traversal is on the ground(s) that applicant does not believe that the two species are patenatably distinct, because both entail "removal of a photoresist...". This is not found persuasive because a search for a removal from a silicon dioxide does not encompass a search of removal from a silicon oxynitride. Layer. The requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Iba et al. (U.S. 5,883,006).
5. Iba (Fig. 2a-e) discloses:

Art Unit: 2813

(cl. 1) a rework process of patterned photo-resist layer, comprising at least: providing a substrate (100) with a first dielectric anti-reflective coating (DARC, i.e. silicon dioxide, 106), and a first primer (108) and a patterned photo-resist layer (110) being sequentially formed thereon; removing the first patterned photo-resist layer and the first primer from the first DARC (Fig. 2c); forming a second DARC (116) on the first DARC; forming a second primer (118) on the second DARC; and forming a second patterned photo-resist layer (120) on the second primer;

(cl. 6) using a dry strip (Col. 4, Lines 12) method removing a first patterned and the first primer (Fig. 2c).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iba (U.S. 5,883,006) in combination with Pinarbasi et al. (U.S. 6,861,177).

8. Iba does not appear to disclose removal by a wet strip. However Iba discloses the same invention except of removal by RIE, Pinarbasi (Col. 7, Lines 19-22) shows that RIE and wet strip form equivalent structures known in the art known in the art.

Therefore, because these two processes form art recognized equivalent at the time the

Art Unit: 2813

invention was made, one of ordinary skill in the art would have found it obvious to substitute the use of a wet strip for RIE in order to remove layers in the structure.

9. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iba (U.S. 5,883,006) and Pinarbasi et al. (U.S. 6,861,177) as applied to claim 2 and further in combination with Wang et al. (U.S. 6,200,907).

10. Neither Iba nor Pinarbasi appear to disclose the use alkaline and acid comprising HF.

11. Wang (Col 6, Lines 30-35; Col. 7, Lines 49-51) teaches wet strip/etch comprising the use of HF and alkaline.

12. It would have been obvious to one of ordinary skill in the art to incorporate the use of HF and alkaline with the modified process of Iba in order to provide a wet strip.

13. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iba (U.S. 5,883,006) in combination with Hsia (U.S. 6,251,568).

14. Iba discloses the elements stated in paragraph 5 of this office action, but does not appear to disclose removal by a dry strip using oxygen plasma. However Iba discloses the same invention except of removal by RIE, Hsia (Col. 7, Lines 3-12) shows that RIE and dry strip using an oxygen plasma form equivalent structures known in the art known in the art. Therefore, because these two processes form art recognized equivalents at the time the invention was made, one of ordinary skill in the art would

Art Unit: 2813

have found it obvious to substitute the use of a dry strip for RIE in order to remove layers in the structure.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iba (U.S. 5,883,006) in combination with Buehrer et al. (U.S. 6,884,734).

Iba discloses the elements stated in paragraph 5 of this office action, but does not appear to show explicitly its primer is HMDS.

Buehrer utilizes HDMS (Col. 7, Lines 51-55).

It would have been obvious to one of ordinary skill in the art to form the primer of Iba with HDMS in order to enhance adhesion to the photoresist as taught by Buehrer (Col. 7, Lines 51-55).

#### ***Allowable Subject Matter***

Claims 15-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious forming a DARC of SION with silicon dioxide formed on the SION including all the limitations of the independent claim.

#### ***Claim Objections***

Claims 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, for the reasons indicated, *supra*.

#### ***Conclusion***

Art Unit: 2813

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses in: Mancini et al. (U.S. 2002/0058383) the use of HMDS to improve adhesion to photoresist; Kim (DERW 2003-873617) a photoresist formed on a first and second DARC; Adetutu (U.S. 2004/0102040) TEOS used to form anti-reflecting coating; Farrar (U.S. 6,740,392) the use of either RIE or dry-strip to cause removal of layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

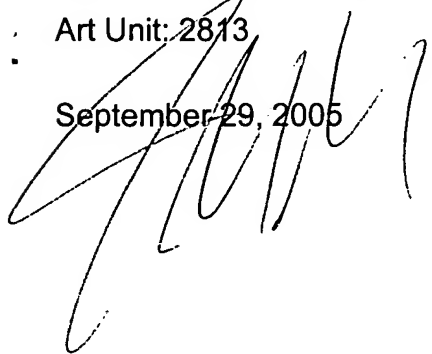
Jmm

Application/Control Number: 10/720,735

Page 7

Art Unit: 2813

September 29, 2005

A large, stylized handwritten signature in black ink, likely belonging to Michael Lebentritt, is written over the date.A handwritten signature in black ink, reading "Michael Lebentritt", is positioned above the printed name.

**MICHAEL LEBENTRITT**  
**SUPERVISORY PATENT EXAMINER**